INNOVATIONS FOR SCALING UP IMPLEMENTATION OF AFRICA'S DEVELOPMENT PRIORITIES

Virtual workshop on the AUDA-NEPAD Centre of Excellence for Science, Technology, Innovation (STI)

Thursday, 1 December 2020

Report

Jointly organised by

AUDA-NEPAD
AFRICAN UNION DEVELOPMENT AGENCY

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Touching lives through innovation

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African Union Development Agency - NEPAD

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Introduction

To strengthen delivery, the African Union Development Agency (AUDA-NEPAD) has established five Centres of Excellence (CoEs) addressing key development priorities in Agenda 2063. The CoEs are prime AU instruments for leveraging knowledge and science-backed innovations to support strategic and accelerated implementation of Agenda 2063. The AUDA-NEPAD Science, Technology and Innovation (ST&I) Centre of Excellence (CoE) is one of the five Centres, and is established in South Africa, in partnership with the Council for Scientific and Industrial Research (CSIR) and Stellenbosch University.

On 1 December 2020, a virtual workshop was conducted which was jointly organised by Stellenbosch University (SU), the Council for Scientific and Industrial Research (CSIR) and African Union Development Agency-NEPAD (AUDA-NEPAD). Over 120 participants from the three organisations attended the workshop. Also, in attendance were specially invited representatives of the South African Department of Science and Innovation DSI and the UN office for Africa.

This document will highlight the purpose, preliminary outcomes and way forward based on the workshop.

The purpose and the expected outcome of the workshop

The purpose of the virtual workshop was to identify innovations which can be packaged for scaling-up implementation along Africa's economic growth and development priorities. The virtual workshop brought together players in the Stellenbosch University (SU) and CSIR science and research ecosystem.

The workshop was expected to focus on innovations and best practice in the following thematic areas:
- Healthcare (Health and Human wellbeing)
- Industrialisation, Markets and Trade (AfCFTA)
  a. Social and Economic Infrastructure: Water, Energy, Agro-Industry, Environment, Infrastructure
  b. Economic Integration
- Systems and Technologies for the future, Digitization, Data, including Artificial Intelligence
- Enterprise development (e-commerce; product development and commercialisation; Markets and Trade; ICT infrastructure)
- Governance and security (e-Government, Communication and ICT)

The thematic areas are guided by African Member State priorities in line with Agenda 2063 goals and targets – See Annexure A.

A key element in the purpose and value-proposition of the AUDA-NEPAD ST&I CoE is to foster "real and active" two-way flow connection between SCEINCE, POLICY and PRACTICE. In the way, the AUDA-NEPAD ST&I CoE will specifically be leveraging in Agenda 2063 implementation processes the required knowledge resource (i.e. science- and evidence-backed innovations) as input in making critical and strategic policy and investment choices underpinning effective and impact-oriented implementation of Agenda 2063 goals and targets as domesticated in national development plans (NDPs) in the 55 African Union Member States. The AUDA-NEPAD ST&I CoE, with a continental reach and mandate, will be leveraging the research and science capabilities existing in the Stellenbosch University and CSIR knowledge and research ecosystems, while connecting Stellenbosch University and CSIR knowledge and research ecosystems to other knowledge and research ecosystems in the continent.

Workshop programme and methodology

The workshop programme, designed for highly interactive and dialogue-driven, presented in Annexure B.

Attended by a cross-section of researchers, academia, programme staff across varying disciplines and sectors, the Workshop approach embraced systems approaches, with the expectation to systematically provide for blend inter-linkages and inter-dependences across identified innovations. This is important for holistic, comprehensive and integrated solutions.

The workshop ran in two interaction segments, namely:
i.   A plenary session with higher level presentations and discussion on the scope of the collaboration and the workshop
ii. Five parallel Breakaway groups: Organised along the five thematic areas which allowed a more intense deep dive to identify innovations using a guiding checklist.

The discussion and reporting guide used in the workshop is attached as Annexure C.

Breakaway groups

After the plenary session, the participants reconvened in five break-away groups with each group assigned to deal with one of the identified five thematic areas. As per the discussion-reporting template, each group was guided into the group assignment by following two discussion points:

1.   Identify and prioritise innovations and best-practice models which can be packaged for scaling-up implementation of Africa's economic growth and development priorities.
2.   Considerations for implementation and scaling-up
   a. Partnerships between SU, CSIR, AUDA-NEPAD and alliances and networks beyond (i.e. Regional Economic Communities, Private industry, Civil Society, others) that are required to drive the scaling up of innovations
   b. High-level identification of possible resources required (skills, financial etc)
   c. Other

Each group session was moderated by a team of a co-chairs, nominated from the trilateral partners being Stellenbosch University, the CSIR and the AUDA-NEPAD/. Two Post-Doc Fellows were assigned as rapporteurs for each group.

Each of the Groups presented a brief at the closing plenary session highlighting main innovations (technologies, practices, systems) identified by the group.

Preliminary outcomes

The workshop identified over 40 knowledge-based innovations which could potentially be packaged for scaling-up implementation. These are innovations, coming out of long-running programmes in the SU and CSIR project clusters, represent widely tested and proven technologies or practices and essentially ready for packaging and domesticating for scaling up implementation in more circumstances. The Innovations covered a wide spectrum of solutions. These include high throughput screening technologies for application in drug discovery, Epidemiological modelling, initiative around climate change studies, water-energy-food security innovations, training in e-learning, e-infrastructure, payment systems, and governance and security, among others. Table 1 presents preliminary compilation of the innovations/solutions according to the five thematic priority areas.

Table 1:   Preliminary feedback from workgroups

TABLE 1.1: WORKGROUP 1: PRELIMINARY FEEDBACK

BREAKAWAY GROUP TITLE	WG1 Theme: Healthcare (Health and Human wellbeing)		
GROUP CO-CHAIRS	Dr Deepak Govindaraj (CSIR); Prof Aggrey Ambali (AUDA-NEPAD)		
GROUP RAPPORTEUR(S)	Dr Taime Sylvester, Dr Maaike Eken, Dr Alex Alexandre		
GROUP PARTICIPANTS (NAMES)	**Stellenbosch University** • Prof Nico Gey van Pittius • Ms Lynnemore Scheepers • Prof Gerhard Walzl • Dr Liezel Smith • Dr Andriëtte Hiemstra • Prof Gian van der Spuy • Dr Andre Loxton • Prof Mark Cotton • Prof Leslie Swartz • Prof Jason Banjes • Prof Mark Tomlinson	**CSIR** • Dr Mapitso Molefe • Thabang Molefi • Coralie Van Reenen • Dr Jenny-Lee Panayides • Dr Tsepo Tsekoa • Dr Yolandi Lemmer • Dr Janine Scholefield • Dr Maretha O'Kennedy	**AUDA- NEPAD** • Mr. Jeremy Ouedraogo

OUTCOME REPORT

IDENTIFIED/AGREED innovation/solution	CORE SCOPE AND PURPOSE OF THE INNOVATION/ SOLUTION	LEAD ORGANISATION /DEPARTMENT/ CLUSTER)	HIGHLIGHT OF 2-3 CONDITIONS FOR SUCCESSFUL SCALING-UP IMPLEMENTATION
1. Localization of active pharmaceutical ingredient production for both small molecule and biopharmaceutical drugs	The need for localization of pharmaceutical manufacturing on the African continent has been discussed for a number of years, with the COVID-19 pandemic placing the security of supply risks in sharp focus.	CSIR : Dr. Jenny-Lee Panayides and Dr. Tsepo Tsekoa / Stellenbosch University : Partners TBC	R&D facilities are in place, the CSIR are currently building the FuturePharma "open access" facility for translational process development through National Treasury funding.

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/ solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
	The solution would focus on the application of modern manufacturing technologies to support rapid local adoption of 4IR business models and pilot manufacturing.		Further financial support will be required to fund research projects and support the establishment of the cGMP pilot-scale production facilities.
2. Development of High Throughput Screening technologies for application in drug discovery.	The need for the acceleration of drug discovery in Africa has been highlighted by the COVID-19 pandemic, where the need for novel drug treatments has been exacerbated	CSIR: Dr. Alexandre/ Stellenbosch University Dr. Andriette Hiemstra	The facilities are already in place for these works, however, financial support to expand them is needed
3. Epidemiological modelling	Epidemiological modelling developed on the continent, for different diseases such as COVID-19 and HIV, can be used to support health research policies in our countries	Stellenbosch University Prof Alex Welte	
4. Modular clinic with capability to use renewable energy and other environmentally friendly innovations	Trucks transformed into fully equipped mobile clinics to give access to healthcare to African populations, especially those in rural communities	CSIR: Thabang Molefi, Coralie Van Reenen	Healthcare practitioners employed to work in modular clinics
5. Climate change impact on health	Predictions of the demographics of the diseases (viruses/non-communicable diseases)	CSIR – Prof Neville Sweijd	Investigate climate sensitive diseases and predict the changes of their spread
6. Chronic Health dispensing machines; and handheld devices for characterisation of risks that can lead to the spread of infectious diseases such as TB	These technologies are intended for better diseases management i.e. to depopulate healthcare facilities, as well as for the control of the spread of infectious diseases	CSIR: Thabang Molefi, Coralie Van Reenen / Stellenbosch University: Prof. Mark Cotton	Involvement of civil societies; regional governments health ministries

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/ solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
7. Development of point-of-care diagnostic assays and medical devices	Such point-of-care diagnostic assays and devices will give access to diagnostic tests to rural and remote communities in Africa that would otherwise have to travel long distances to urban centres to have this access	CSIR: Dr Alexandre, Dr Suleman / Stellenbosch University Biomedical Centre of Excellence for TB research	Establishment of Collaborations with institutions that can test the application of the assays and devices that have already been developed
8. Precision medicine-based screening	To improve the treatment and management of diseases, such as cancers, on the continent	CSIR Dr Govindaraj; Dr Alexandre, and Dr Scholefield	Scaling up will require financial resources to fund the purchase of equipment and different laboratory technicians' salaries
9. Initiative around climate change studies	Climate change studies can be used to study how these changes affect the incidence and prevalence of diseases, such as malaria, on the continent. These studies have far reaching benefits on healthcare management and economic development on the African continent	Stellenbosch University / CSIR	
10. Synthetic biology work on microbiome	To study the effects of microbiomes on diseases outcome and susceptibility in African populations	CSIR: Dr Govindaraj, Dr Naidoo, and Dr Scholefield	
11. Development of affordable human vaccines	Africa is one of, if not the most affected continent in terms of infectious diseases. These deplete further the already strained economic resources of the continent. Cheap human vaccines can greatly contribute in solving this problem	CSIR: Dr Alexandre	Funding for vaccine production facilities to be built; establishment of collaborations with other institutions for animals and human trials of the vaccines that will be developed
12. Development of affordable animal vaccines	To combat animal diseases on the continent	CSIR: Dr Suleman / Stellenbosch University Biomedical Centre of Excellence for TB research	Funding needed to support the infrastructure in place

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/ solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
13. Mental health research	This work needs to play a prominent role on the continent, especially on how technology can be used to close mental health management and treatment gaps	Stellenbosch University: Prof Mark Tomlinson	
14. Bioinformatic and data analysis	Application of bioinformatic for data analysis in TB and other disease research	Stellenbosch University: Biomedical Centre of Excellence for TB research	

TABLE 1.2: WORKGROUP 2: PRELIMINARY FEEDBACK

Breakaway Group Title	WG 2 Theme: Industrialisation, Markets and Trade (AfCFTA)		
	a. Social and Economic Infrastructure: Water, Energy, Agro-Industry, Environment, Infrastructure		
	b. Economic Integration		
	Cross-cutting priorities to be considered: Data, Education, Skills Development, Training.		
Group Co-chairs	Prof Kennedy Dzama (SU); Dr Kitessa Roro (CSIR); Mr. Martin Bwalya (AUDA-NEPAD)		
Group Rapporteur(s)	Dr Palesa Natasha Mothapo, Dr Peter Klein		
Group Participants (names)	**Stellenbosch University** • Prof Sampson Mam-phweli • Prof Gideon Wol-faardt • Prof Wesaal Khan • Me. Karin Kritzinger • Prof John Measey • Prof Andre Burger • Prof Kobus du Plessis • Dr Willem de Clercq • Dr Albert Strever • Ms Joanna Fatch	**CSIR** • Dr Clinton-Carter Brown • Dr Harrison Pienaar • Mr Ash Seetal • Zvikomborero Tanga-wamira • Dr Clinton Carter Brown • Dr Mkhulu Mathe • Dr Ereck Chakauya • Dr Lara Kotze • Dr Bethuel Sehlapelo • Dr Kenny Tenza • Dr Shingi Mutanga • Steven Weerts • Dr Brian Mantlana • Joe Mapiravana • Douglas Trotter • Peta De Jager • Lee-Hendor Ruiters • Martin Sanne • Fabrizio Dionisio • Prof Neville Sweijd • Dr Blessed Okole • Jan Lekalakala	**AUDA- NEPAD** • Martin Bwalya • Lukovi Seke

OUTCOME REPORT

IDENTIFIED/AGREED INNOVATION/SOLUTION	CORE SCOPE AND PURPOSE OF THE INNOVATION/SOLUTION	LEAD ORGANISATION /DEPARTMENT/ CLUSTER)	HIGHLIGHT OF 2-3 CONDITIONS FOR SUCCESSFUL SCALING-UP IMPLEMENTATION
15. Water Innovations: a. 15kW wind turbine system currently under demonstration at Stellenbosch University b. Hybrid Concentrator Photovoltaic module developed at NMU PV spoke, currently under prototyping, it will be going for demonstration soon. c. Wireless Health Monitoring system for PV systems developed at Stellenbosch University d. Heliostats, Heliopods and control systems developed at Stellenbosch University for Hugh temperature solar thermal energy. e. Solar dish bryton cycle developed at UP solar f. thermal spoke for high temperature solar thermal energy	Best practice development along the water-energy-food nexus • Innovations around the supply of clean water and energy	Stellenbosch University • CoE Renewable energy • Water Research Institute • School of Public Leadership	Networks are important • Capability support in implementation • Collaborations are essential
16. Water treatment	a. Chemical modification and covalent immobilisation of biosurfactant lipopeptides and glycolipids onto HDPE, PVC and stainless steel for the development of non-leaching biomaterials to control biofilms in industrial settings – South African patent filed		

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
	Multiple barrier water treatment strategies: combination of biological control with solar energy reactors – currently analysing at pilot-scale level (collaboration with University of Johannesburg and Ulster University, UK)		
17. Green Book	i. technology/ tool to assist municipalities/ cities/towns in incorporating the impact of Climate Change in their Plans; ii. Phyco-remediation - a technology for cleaning/ purifying water using algae - demonstrated in some municipalities and Namibia; iii. Biogas (Methane) production from municipal wastewater - CSIR has optimized it to a continuous process as an improvement from the current batch system thus increasing yields; iv. Treatment of Acid Mine Drainage into portable water		
18. Chemical modification and covalent immobilisation of biosurfactant lipopeptides and glycolipids onto HDPE, PVC and stainless steel for the development of non-leaching biomaterials to control biofilms in industrial settings – South African patent filed			

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
19. Multiple barrier water treatment strategies	Combination of biological control with solar energy reactors – currently analysing at pilot-scale level (collaboration with University of Johannesburg and Ulster University, UK)		
20. The production of ethanol from paper sludge	Scale up opportunities for bioethanol and agro-processing	Dr. Lara Kotze-Jacobs, SU	
21. Climate smart agriculture and animal health	a. Optimised ash based mineral block lick (tested in Zimbabwe, SA) b. Healthy SMA²RT snacks from climate smart crops (tested in SA, Lesotho, Botswana) c. Commercialisation of Resurrection Bush Tea from Zimbabwe (tested in SA, Zimbabwe) d. Optimise the utilization of scarce water resource in irrigated crop farming e. To introduce precision farming and improve the overall management of crop production especially amongst emerging farmers Advancing a simple and rapid field test for bovine brucellosis (Tested in SA, Zimbabwe, Botswana)	Dr Ereck Chakauya, AUDA NEPAD SAN-Bio	International partnerships are already in existence Funding and mobility can be considered Agriculture information systems for ease of information delivery to farmers etc

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
22. Food safety	a. Food testing b. Allow people to obtain quality and safe food Development of a food safety lab, with local customisation	SU and CSIR	

23. Aquaculture	a. Production
	  i. Diagnostic technologies
	  ii. Scalable feed
	
	Beneficiating waste
		SU and CSIR	

24. Ports	a. The 5th generation ports, best practise, engineering and environmental design supporting port competitiveness Coastal vulnerability, specifically dealing with Climate change response, sea level rise, coastal flooding, informing settlement and the National Ocean and Coastal Observation Management System	CSIR	
25. a) AUDA-NEPAD Southern African network of Water Centres of Excellence (SANWATCE) project as a model and b) Partners Enhancing Resilience for People Exposed to Risks – PeriPeri-U	a) The AUDA-NEPAD SANWATCE is a AUDA-NEPAD Flagship Programme The Southern African Network of Water Centres of Excellence – a network of 13 Universities and Research Institutions across SADC. Also connects to 9 other institutions in Western and Eastern Africa.	a) AUDA-NEPAD (Mr. Martin Bwalya); SU is the secretariat for SANWATCE (Contact Dr. Nico Elema) and CSIR a science node (contact Mr. Ash Seetal)	• Member state buy-in • Development of regional water science research agenda • Resources to fund research and capacity development

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
	b) PeriPeri-U is network of 13 Universities across Africa with the goal to reduce disaster risks in among African countries through improved national and local disaster risk management, due to enhanced strategic human capacity to integrate risk reduction into critical developmental sectors and programmes. Network has strong support from the AU, UNDRR	b) Dr. Nico Elema (SU)	• Member state buy-in • research and capacity development
26. Green industry: i. SME Integrated Greening Operations: It is developed through the GO4SDGs (Global Opportunities for Sustainable Development Goals) and Green Growth Knowledge Partnership. The SME "Integrated Greening Operations" (I-GO) solution that is being developed as part of the GGKP Green Industry Platform work programme in collaboration with the Partnership for Action on Green Economy (PAGE) initiative	The I-GO solution is designed to help large numbers of SMEs, regardless of their activity type or location, easily understand how their business operations can be improved through resource efficiency measures. The I-GO solution has been designed to build on the vast amount of information (guidance, tools and case studies) and support services (financial incentives, training and technical assistance) that the Green Industry Platform has collected from leading organisations and experts and tailor it to the specific needs of individual SMEs		Capacity development and skills building

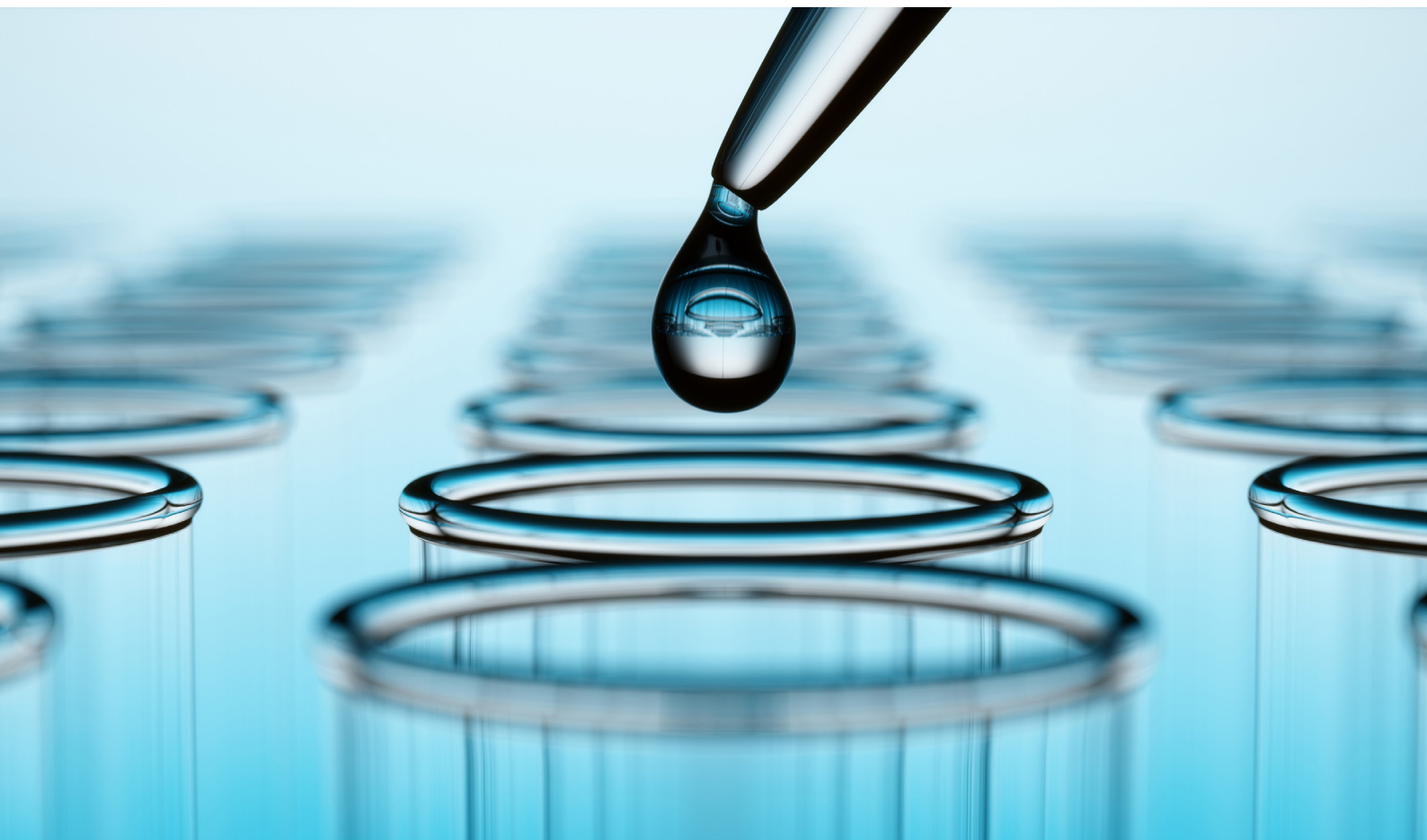| Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
27. The Framework Programme for Education and Training in the Water Sector (FETWater)	Aimed at addressing issue of skills and capacity development, but with a specific focus on workplace (vocational) competence. This addresses the issue of (in many cases academically qualified) individuals who require a few years workplace experience to play a meaningful workplace role. Vocational qualifications are internationally bench-marked and are an important intervention to address gaps in specific sector disciplines, e.g. process control, water infrastructure management, institutional support, water regulations and specialist support, water resources planning	Mr. Ash Seetal (CSIR, Smart Places, Water Centre)	

TABLE 1.3: WORKGROUP 3: PRELIMINARY FEEDBACK

BREAKAWAY GROUP TITLE	WG3 Theme: Systems and Technologies for the future, Digitization, Data, including Artificial Intelligence		
GROUP CO-CHAIRS	Prof Kanshu Rajaratnam (SU); Dr Adnan Abu Mahfouz (CSIR); Dr Talla Kebe (AUDA-NEPAD		
GROUP RAPPORTEUR	Dr Tando Maduna, Dr Sabelo Madonsela		
GROUP PARTICIPANTS (NAMES)	**Stellenbosch University** • Prof Bruce Watson • Prof Paul Mostert • Dr Morne Mostert • Prof Alex Welte • Prof Saartjie Grobbelaar • Prof Bernd Fisher • Prof Steve Kroon • Prof TE Cloete • Prof I Cloete	**CSIR** • Prof Fulufhelo Nelwamondo • Mr Lucas Gumbi • Dr Happy Sithole • Dr Njabulo Siyakatshana • Dr Erick Dube • Mr Xolisa Ngwadla • Ms Chanel Schoeman • Dr Moses Cho • Dr Santosh Ramchuran • Ms Pinda Sifunda • Mr Saddam Matanzima • Eliya Madikane • Jwalane Kganane • Nhlanhla Buthelezi (CSIR?)	**AUDA-NEPAD** • Mr Andson Nsune • Mr Tichaona Mangwende

OUTCOME REPORT

IDENTIFIED/AGREED INNOVATION/SOLUTION	CORE SCOPE AND PURPOSE OF THE INNOVATION/SOLUTION	LEAD ORGANISATION /DEPARTMENT/ CLUSTER)	HIGHLIGHT OF 2-3 CONDITIONS FOR SUCCESSFUL SCALING-UP IMPLEMENTATION
28. Industry – academic partnership	To enforce and enrich the already established links between academia, the private sector and the public sector. To use these relationships to expand on the innovations of Big Data and AI. And to use the established links for efficient communications between various stakeholders. CAIR has industry links in AI.	CSIR as the lead organisation but partnering with the School of DS and CT as the touch point at SU, AUDA-NEPAD	Reinforcing existing relationships between SU and CSIR, and between CSIR and their industry partners. AUDA's far reach within the African continent will be utilised.

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
29. Public sector partnership – improvement on governance of resources	Coupling of Decision Support with effective and efficient resource utilization Public – university trust, links between public sector for their needs	CSIR, AUDA-NEPAD	- The partners could form a committee to improve the partnerships, with a focus on Data Science, Big Data, etc. - Implementation of Asset performance management - Decision support systems
30. Business models, commercialization, development of in house incubators	Developing a business model to work with industry in terms of commercialization. Communication and efficient release of information and how to commercialise and scale up solutions. Innovations could be targeted to improve the therapies and recovery rates in the health sector when dealing with cases such as maternal and neonatal health, HIV infection, Malaria, COVID19 and TB	SU (in collaboration with the Launchlab incubator)	Adapting the model employed by Mezanine and Vodacom used by the SA health system. Expanding on the services and projects stemming from the SU Launchlab incubator.
31. Development of infrastructure	Creation of Data Commons (Repository for Big Data with the implementation of Client protections and Cyber security) Development of infrastructure towards Decision support systems, DS infrastructure and Domain specific applications Focus on financing for projects	CSIR	African Open Science Platform (AOSP) Centre for 4IR (operational in Rwanda). Intentional building of inclusive infrastructure that does not exacerbate inequality Focus on Accessibility for training

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
32. Training – e-learning	Novel academic programmes aimed at: - Developing business models - Contributions with and from a wider community - Academic projects (within faculties) in collaboration with Industry partners	SU	Such projects already exist at SU and these could be expanded upon, forming/ strengthening partnerships between academia and industry

Table 1.4: Workgroup 4: Preliminary feedback

Breakaway Group Title	WG 4 Theme: Enterprise development (e-commerce; product development and commercialisation; Markets and Trade; ICT infrastructure)		
Group Co-chairs	Prof Johan Fourie (SU); Dr Ntsibane Ntlatlapa (CSIR); Mohamed Abdisalam (AUDA-NEPAD)		
Group Rapporteur	Dr Matia Mukama		
Group Participants (names)	**Stellenbosch University** - Prof UL Opara - Prof Marius Ungerer - Prof Johan Fourie	**CSIR** - Chanel Schoeman - Ntsibane Ntlatlapa - Ndumiso Cingo - Eliya Madikane - Edna Kalima - Tendai Sithole	**AUDA-NEPAD** - Ms. Yolisa Kula - Ms Eliya Madikane - Dr M Abdisalam

Outcome Report

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
33. Agriculture development	Feeding the population	SU, CSIR, AU, Individual countries	Power supply, equipment for quality monitoring, human skills development, building multidisciplinary teams, virtual prototyping technologies, focus on the rural population needs

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
			Policy for transforming the rural population, Land rights, GMO policy
34. (Soft Infrastructure) Internet access and ICT Infrastructure	Enable e-commerce, National payment systems, Access to market prices by farmers	SU, CSIR, AU, Individual countries	e-payment systems, virtual prototyping technologies, Commitment to investment by governments
35. Africa Free trade area	Ease commerce	AU	Integration of policies, development of a common market (single African market), harmonisation of standards
36. Hard infrastructure	Ease commerce, storage technologies	CSIR, SU, AU, Individual countries	Opening rural infrastructure, Power, roads, bridges
37. Spectrum	Digital connectivity to drive implementation and access to the smart technologies and resources such as energy, water, internet as necessary condition for economic development. Spectrum rollout is key to allow the business communities and governments to provide the services that micro and small enterprise need. Many technical and regulatory challenges inhibit the auction of spectrum in an equitable and efficient manner.	SU/AUDA-NEPAD/ CSIR	Lessons from one country could easily apply to others. Common standards also key – would allow the micro and small enterprise to expand regional value chains. This initiative may be integrated with AUDA-NEPAD food energy water projects

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
38. Virtual prototyping platform	Bring all role players together for product development. Make it easier for micro enterprises to bring products to market and be competitive. Roll out biomanufacturing industry development centres to support SMEs o undertake product development. To facilitate technology and innovation and promote start-up and domestic enterprise development through agribusiness project	AUDA-NEPAD/SU/ CSIR	This initiative to link with AUDA-NEPAD 100 000 MSMEs. Barriers in the regulatory environment, including burdensome administrative and registration processes, high business registration costs and unfavourable and complex tax systems pose challenges to MSMES/Is and entrepreneurs in starting, operating and growing their businesses. These contribute to informality - a characteristic of African MSMES/ Is that contributes in significant losses in tax revenues for national governments and limits their access to social protections
39. National payments system	The standardisation of national payments systems – the inoperability of most systems across national borders – would facilitate trade and investment within Africa.	SU/AUDA-NEPAD/ CSIR	This initiative will leapfrog and develop a model for the continent.

Table 1.5: Workgroup 5: Preliminary feedback

Breakaway Group Title	WG5 Theme: Governance and security (e-Government, Communication and ICT)		
Group Co-chairs	Prof Sam Tshehla (SU); Ms Khungeka Njobe (CSIR); Mr. Samuel Timpo (AUDA-NEPAD)		
Group Rapporteur	Dr Nqobile Masondo; Dr Winschau van Zyl		
Group Participants (names)	**Stellenbosch University** • Prof Pregala (Solosh) Pillay • Prof Francois Vrey • Prof Ursula van Beek • Prof Abel Esterhuyse	**CSIR** • Dr Paul Lochner • Prof Linda Godfrey • Matthew Chetty • Dr Tirusha Thambiran • Dr Mario Marais • Dr Laticha Walters • Dr Jacob Medupe	**AUDA-NEPAD**

Outcome Report

Identified/Agreed innovation/solution	Core scope and purpose of the innovation/solution	Lead Organisation /Department/ Cluster)	Highlight of 2-3 conditions for successful scaling-up implementation
40. Quality of governance	1. Measuring levels of democracy using Varieties of Democracy (V-Dem) - the most advanced dataset for international comparisons 2. Building capacity	SU Transformation Research Unit (TRU)	RE. 1 Building a comparative data base: • Indicating to what extent a given country meets basic standards defining democracy, such as the rule of law, accountability, responsiveness, freedom, equality, and solidarity. • Alerting to dangers that could lead to democratic breakdowns • RE: 2 Developing scarce skills area in quantitative data analyses via classroom and on-line instruction.

IDENTIFIED/AGREED INNOVATION/SOLUTION	CORE SCOPE AND PURPOSE OF THE INNOVATION/SOLUTION	LEAD ORGANISATION /DEPARTMENT/ CLUSTER)	HIGHLIGHT OF 2-3 CONDITIONS FOR SUCCESSFUL SCALING-UP IMPLEMENTATION
41. Universal Health Coverage: Telehealth Governance Scale-up Framework	Scope: Scale-up telehealth/ telemedicine/ digital health intervention Purpose: Assist countries to design, plan, implement and manage the successful scale-up of telehealth/ telemedicine/ digital health interventions using business, digital and project governance approaches	CSIR	• Legal and political mandate • Approved UHC digital information policy/ strategy • Approved telehealth/ telemedicine/ digital health intervention policy/ strategy • Successful Pilot programs • Approved budget
42. Universal Health Coverage: Digital Information Platform Governance Scale-up Framework	Scope: Scale-up Universal Health Coverage (UHC) digital information platform governance Purpose: Assist countries to design, plan, implement and manage the scale-up pf their UHC programs using ICT governance UHC programs.	CSIR	• Legal and political mandate • Approved UHC digital information policy/ strategy • Successful Pilot programs • Approved budget
43. Universal Health Coverage: Information Security and Privacy Governance Scale-up Framework	Scope: Scale-up governance of UHC digital health information platform's information security and privacy Purpose: Assist countries to successfully design, plan, implement and manage the scale-up of information security and privacy in their UHC programs.		• Legal and political mandate • Approved UHC digital information policy/ strategy • Approved information security and privacy policy/ strategy • Successful Pilot programs • Approved budget
44. Universal Health Coverage: Digital Health Business Case Assessment Framework	Scope: Assessment of digital health information platform's scale-up initiatives Purpose: Assist countries to successfully assess the risks and benefits of digital health scale-up initiatives.	CSIR	• Legal and political mandate • Approved UHC digital information policy/ strategy • Successful Pilot programs • Approved budget

ADDITIONAL POINTS RAISED IN WORKGROUP 5

- Monitor and strengthen the quality of governance, this can be achieved by creating open access data centres to help monitor the quality of leadership or institutions in Africa

- Strengthen military governance to minimise corruption, hold leaders accountable and improve security measure e.g. elections and cyber security. For example, the use of block chain technology to enhance transparency and reduce corruption.

- Fast tracking the uptake of social and technological innovations in Africa.

- Creating data hubs and outreach programs that can assist in building capacity and upskilling the next generation of leaders.

- Digitisation of governance risk and compliance to contribute to countries leadership.

- Adopt innovative technologies that are customised for the society at large and will benefit the African population.

- Focus on implementations that were done in the past and why the implementation process never succeeded.

- Creating a clear framework of governance.

- ICT governance to ensure acquisition and use of information technology.

- Involvement of civil society to give feedback on the efficiency of implemented innovation.

- Democratisation of data, the need for data ownership by local communities.

- Data integration – integrating different data sources that can be available for analysis by multiple individuals.

- Soft systems, human-centred approaches – to be able to resolve conflicts and distrust between different types of groups.
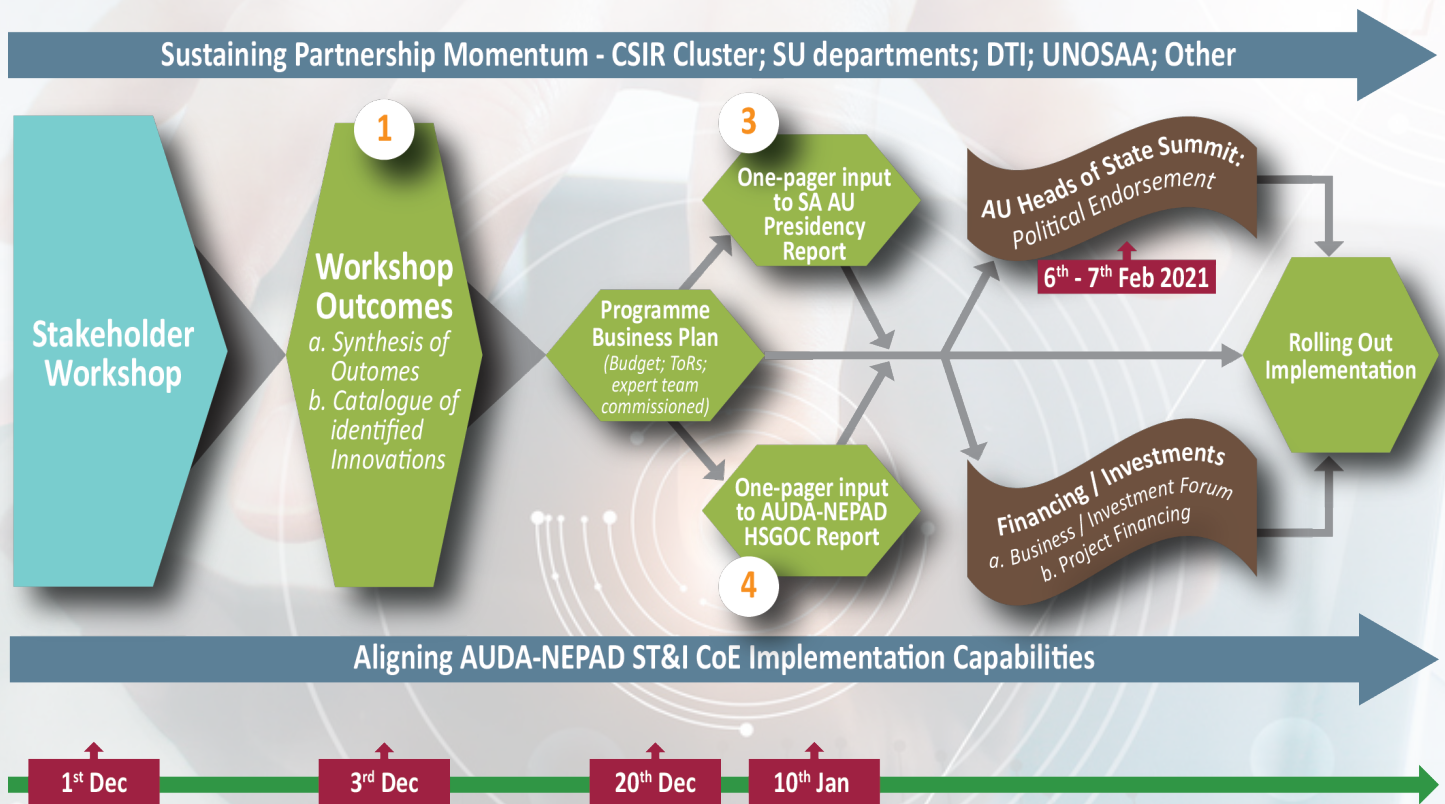
Way forward

The outputs from this workshop will support the development of a Framework-Business Plan during the latter parts of 2020 and early 2021, from where detail research and innovation projects can be identified and prioritised for further development of Business Plans to be resourced and scaled-up for implementation across the African continent.

In addition, initial feedback from the workshop will feed into the AU Heads of State Summit and the AUDA-NEPAD Heads of State and Government Orientation Committee (HSGOC) reports of February 2021. Figure 1 presented a preliminary schematic outline of the main action tracks and associated milestones and timelines

AUDA-NEPAD, CSIR and Stellenbosch University Collaboration
"scaling up innovation to accelerate Agenda 2063 implementation"

POST-WORKSHOP ROADMAP

Sustaining Partnership Momentum - CSIR Cluster; SU departments; DTI; UNOSAA; Other

Stakeholder Workshop

1

Workshop Outcomes
a. Synthesis of Outomes
b. Catalogue of identified Innovations

Programme Business Plan
(Budget; ToRs; expert team commissioned)

3

One-pager input to SA AU Presidency Report

One-pager input to AUDA-NEPAD HSGOC Report

4

AU Heads of State Summit: Political Endorsement

6th - 7th Feb 2021

Financing / Investments
a. Business / Investment Forum
b. Project Financing

Rolling Out Implementation

Aligning AUDA-NEPAD ST&I CoE Implementation Capabilities

1st Dec   3rd Dec   20th Dec   10th Jan

Annexure A - African Member State Priorities

MEMBER STATES PRIORITIES

HEALTH ~ 74%
- Reducing maternal, neo-natal and under 5 mortality rates
- Reducing the incidence of malaria
- Reducing new HIV infections
- Reducing the incidence of TB
- Prevalence of underweight among children
- Curbing child labour, child marriage and human trafficking
- Reducing gender-based discrimination and violence
- Increasing access to safe drinking water to the population

INDUSTRIALISATION ~ 52%
- Increasing Agriculture production and productivity
- Increase Manufacturing value added as % of GDP

EDUCATION ~ 55%
- Increasing pre-school and secondary school enrolment rates

DATA, MONITORING & EVALUATION ~ 42%
- Strengthening the statistics, monitoring and evaluation systems

SCIENCE, TECHNOLOGY AND INNOVATION ~ 10%
- Promoting Science, Technology and Innovation

52% ~ ECONOMIC INTEGRATION
- Increasing the contribution of the fisheries sector to the GDP
- Job creation and reducing unemployment rates especially among youth
- Increasing the contribution of total tax revenue to GDP
- Increasing the proportion of resources mobilisation raised through innovative financing mechanisms in the national budget
- Increasin the contribution of Tourism to the national GDP

3% ~ TECHNOLOGY AND DIGITAZATION
- Increasing access to the internet

29% ~ GOVERNANCE
- Strengthening institutions and leadership for enhanced service delivery
- Measures that will enhance the general public's confidence in elections
- Strengthening anti-corruption and accountability measures

19% ~ INFRASTRUCTURE
- Increasing electricity generation and distribution
- Increasing infrustructure connectivity

10% ~ TERRESTRIAL AND INLAND WATER
- Increasing the percentage of terrestrial and inland water areas preserved

Annexure B – Workshop Programme

Stellenbosch University / CSIR/ AUDA-NEPAD virtual workshop on the AUDA-NEPAD Centre of Excellence for Science, Technology, Innovation

DATE:	Tuesday 1 December 2020
TIME:	13:00 to 17:00 (Central Africa Time)
MEDIUM:	MS Teams - Click here to join the main meeting from 12:50

PROGRAMME

TIME	ITEM	PERSON
	PLENARY SESSION	
13:00 - (5 mins)	**Opening and orientation**	Dr Nico Elema
13:05 - (10 Mins)	**Welcome from Stellenbosch University**	Prof Hester Klopper – DVC: Strategy and Internationalisation
13:15 - (10 mins)	**Focus areas of the CSIR**	Ms Khungeka Njobe
13:25 - (10 mins)	**AUDA-NEPAD CoE in Science, Technology Innovation**	Dr Talla Kebe
13:35 - (1h30m)	**Break-away groups**	

WG1 Theme: Healthcare (Health and Human Wellbeing)

Cross-cutting priorities to be considered: Data, Education, Skills Development, Training.

WG 2 Theme: Industrialisation, Markets and Trade (AfCFTA)

a) Social and Economic Infrastructure: Water, Energy, Agro-Industry, Environment, Infrastructure

b) Economic Integration

Cross-cutting priorities to be considered: Data, Education, Skills Development, Training.

Cross-cutting priorities to be considered: Data, Education, Skills Development, Training.

WG3 Theme: Systems and Technologies for the future, Digitization, Data, including Artificial Intelligence

Cross-cutting priorities to be considered: Data, Education, Skills Development, Training.

WG 4 Theme: Enterprise development (e-commerce; product development and commercialisation; Markets and Trade; ICT infrastructure)

Cross-cutting priorities to be considered: Data, Education, Skills Development, Training.

WG5 Theme: Governance and security (e-Government, Communication and ICT)

Cross-cutting priorities to be considered: Data, Education, Skills Development, Training

15:00 - 15 mins each)	**Feedback by groups**	Dr Ndumiso Cingo and Mr Martin Bwalya
16:35 (15 mins)	**Way forward and roadmap**	Dr Talla Kebe, Ms Khungeka Njobe and Prof Eugene Cloete

Annexure C – Breakaway Groups Discussion and Reporting template

The purpose of the virtual workshop is to identify innovations which can be packaged for scaling-up implementation along Africa's economic growth and development priorities. To ensure this expected outcome, the following template is used to capture, in a standard manner, the discussions in the Breakaway groups

BREAKAWAY GROUP TITLE	
GROUP CO-CHAIRS	
GROUP RAPPORTEUR	
GROUP PARTICIPANTS (NAMES)	

Outcome Report			
IDENTIFIED/AGREED INNOVATION/SOLUTION	CORE SCOPE AND PURPOSE OF THE INNOVATION/ SOLUTION	LEAD ORGANISATION / DEPARTMENT/CLUSTER)	HIGHLIGHT OF 2-3 CONDITIONS FOR SUCCESSFUL SCALING-UP IMPLEMENTATION
1.			
2.			
3.			
4.			

Annexure D – Participants List

	Name	Organisation
1	Dr Talla Kebe	AUDA-NEPAD
2	Abiola Shomang	AUDA-NEPAD
3	Assia Meghfour	AUDA-NEPAD
4	Dr Bernice Mclean	AUDA-NEPAD
5	Dr Jeremy Ouedraogo	AUDA-NEPAD
6	Dr Tichaona Mangwende	AUDA-NEPAD
7	Lukovi Seke	AUDA-NEPAD
8	Mr Andson Nsune	AUDA-NEPAD
9	Mr Martin Bwalya	AUDA-NEPAD
10	Mr Mohammed Abdisalam	AUDA-NEPAD
11	Mr Samuel Timpo	AUDA-NEPAD
12	Ms Edna Kalima	AUDA-NEPAD
13	Ms Eliya Madikane	AUDA-NEPAD
14	Ms Tendai Sithole	AUDA-NEPAD
15	Ms Yolisa Kula	AUDA-NEPAD
16	Mustafa Sakr	AUDA-NEPAD
17	Pamla Gopaul	AUDA-NEPAD
18	Prof Aggrey Ambali	AUDA-NEPAD
19	Ms Treasure Maphanga	AUDA-NEPAD (Ae-Trade)
20	Coralie Van Reenen	CSIR
21	Douglas Trotter	CSIR
22	Dr Adnan Abu Mahfouz	CSIR
23	Dr Alex Alxandre	CSIR
24	Dr Bethuel Sehlapelo	CSIR
25	Dr Brian Mantlana	CSIR
26	Dr Clinton Carter Brown	CSIR
27	Dr Deepak Govindaraj	CSIR
28	Dr Ereck Chakauya	CSIR (AUDA-NEPAD SANBio)
29	Dr Erick Dube	CSIR
30	Dr Happy Sithole	CSIR
31	Dr Harrison Pienaar	CSIR
32	Dr Jacob Medupe	CSIR
33	Dr Janine Scholefield	CSIR
34	Dr Jenny-Lee Panayides	CSIR
35	Dr Kenny Tenza	CSIR
36	Dr Kitessa Roro	CSIR
37	Dr Lara Kotze (Biomanufacturing Industry Development Centre)	CSIR
38	Dr Laticha Walters	CSIR

	Name	Organisation
39	Dr Mapitso Molefe	CSIR
40	Dr Maretha O'Kenndy	CSIR
41	Dr Mario Marais	CSIR
42	Dr Mkhulu Mathe	CSIR
43	Dr Ndumiso Cingo	CSIR
44	Dr Niel Goslett	CSIR
45	Dr Njabulo Siyakatshana	CSIR
46	Dr Ntsibane Ntlatlapa	CSIR
47	Dr Paul Lochner	CSIR
48	Dr Peter Klein	CSIR
49	Dr Sabelo Madonsela	CSIR
50	Dr Shingi Mutanga	CSIR
51	Dr Tirusha Thambiran	CSIR
52	Dr Tsepo Tsekoa	CSIR
53	Dr Yolandi Lemmer	CSIR
54	Fabrizio Dionisio	CSIR
55	Jacob Medupe	CSIR
56	Joe Mapiravana	CSIR
57	Lee-Hendor Ruiters	CSIR
58	Martin Sanne	CSIR
59	Matthew Chetty	CSIR
60	Mr Ash Seetal	CSIR
61	Mr Boyse Pillay	CSIR
62	Mr Jan Lekalakala	CSIR
63	Mr Lucas Gumbi	CSIR
64	Ms Chanel Schoeman	CSIR
65	Ms Khungeka Njobe	CSIR
66	Ms Yoliswa Kula	CSIR
67	Peta De Jager	CSIR
68	Prof Fulufhelo Nelwamondo	CSIR
69	Prof Linda Godfrey	CSIR
70	Prof Neville Sweijd	CSIR
71	Steven Weerts	CSIR
72	Thabang Molefi	CSIR
73	Xolisa Ngwadla	CSIR
74	Zvikomborero Tangawamira	CSIR
75	Me Mandry Ntshani	South Africa Dept of Science and Innovation (DSI)
76	Me Mmampei Chaba	South Africa Dept of Science and Innovation (DSI)
77	Mr Daan du Toit	South Africa Dept of Science and Innovation (DSI)

	Name	Organisation
78	Dr Andre Loxton	Stellenbosch University
79	Dr Liezel Smith	Stellenbosch University
80	Dr Morne Mostert	Stellenbosch University
81	Dr Nico Elema	Stellenbosch University
82	Dr Andriëtte Hiemstra	Stellenbosch University
83	Dr Willem de Clercq	Stellenbosch University
84	Me Karin Kritzinger	Stellenbosch University
85	Ms Lynnemore Scheepers	Stellenbosch University
86	Prof Alex Welte	Stellenbosch University
87	Prof Andre Burger	Stellenbosch University
88	Prof Brian Ganson	Stellenbosch University
89	Prof Bruce Watson	Stellenbosch University
90	Prof Eugene Cloete	Stellenbosch University
91	Prof Francois Vrey	Stellenbosch University
92	Prof Gerhard Walzl	Stellenbosch University
93	Prof Gian van der Spuy	Stellenbosch University
94	Prof Gideon Wolfaardt	Stellenbosch University
95	Prof Hester Klopper	Stellenbosch University
96	Prof Jason Bantjes	Stellenbosch University
97	Prof Johan Fourie	Stellenbosch University
98	Prof Johann Gorgens	Stellenbosch University
99	Prof John Measey	Stellenbosch University
100	Prof Kanshu Rajaratnam	Stellenbosch University
101	Prof Kennedy Dzama	Stellenbosch University
102	Prof Kobus du Plessis	Stellenbosch University
103	Prof Leslie Swartz	Stellenbosch University
104	Prof Linus Opara	Stellenbosch University
105	Prof Mark Cotton	Stellenbosch University
106	Prof Mark Tomlinson	Stellenbosch University
107	Prof Nico Gey van Pittius	Stellenbosch University
108	Prof Paul Mostert	Stellenbosch University
109	Prof Pregala (Solosh) Pillay	Stellenbosch University
110	Prof Saartjie Grobbelaar	Stellenbosch University
111	Prof Sam Tshehla	Stellenbosch University
112	Prof Sampson Mamphweli	Stellenbosch University
113	Prof Ursula van Beek	Stellenbosch University
114	Prof Wesaal Khan	Stellenbosch University
115	Dr Albert Strever	Stellenbosch University
116	Dr Anton Du Preez Van Staden	Stellenbosch University
117	Dr Maaike Eken	Stellenbosch University
118	Dr Matia Mukama	Stellenbosch University

	NAME	ORGANISATION
119	Dr Nqobile Masondo	Stellenbosch University
120	Dr Palesa Mothapo	Stellenbosch University
121	Dr Taime Sylvester	Stellenbosch University
122	Dr Tando Maduna	Stellenbosch University
123	Dr Winschau van Zyl	Stellenbosch University
124	Ms Joanna Fatch (SANWATCE)	Stellenbosch University
125	Prof Abel Esterhuyse	Stellenbosch University
126	Prof Bernd Fischer	Stellenbosch University
127	Prof Ian Cloete	Stellenbosch University
128	Prof Marius Ungerer	Stellenbosch University
129	Prof Steve Kroon	Stellenbosch University